

المنارة the BEACON

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البروفيسور جيمس بلمر
Professor James Plummer

"بلمر" محاضراً زائراً في جامعة الملك عبد الله الهندسة تقنية تبدأ بالعلوم ثم تتحول إلى صناعة تفيد الناس

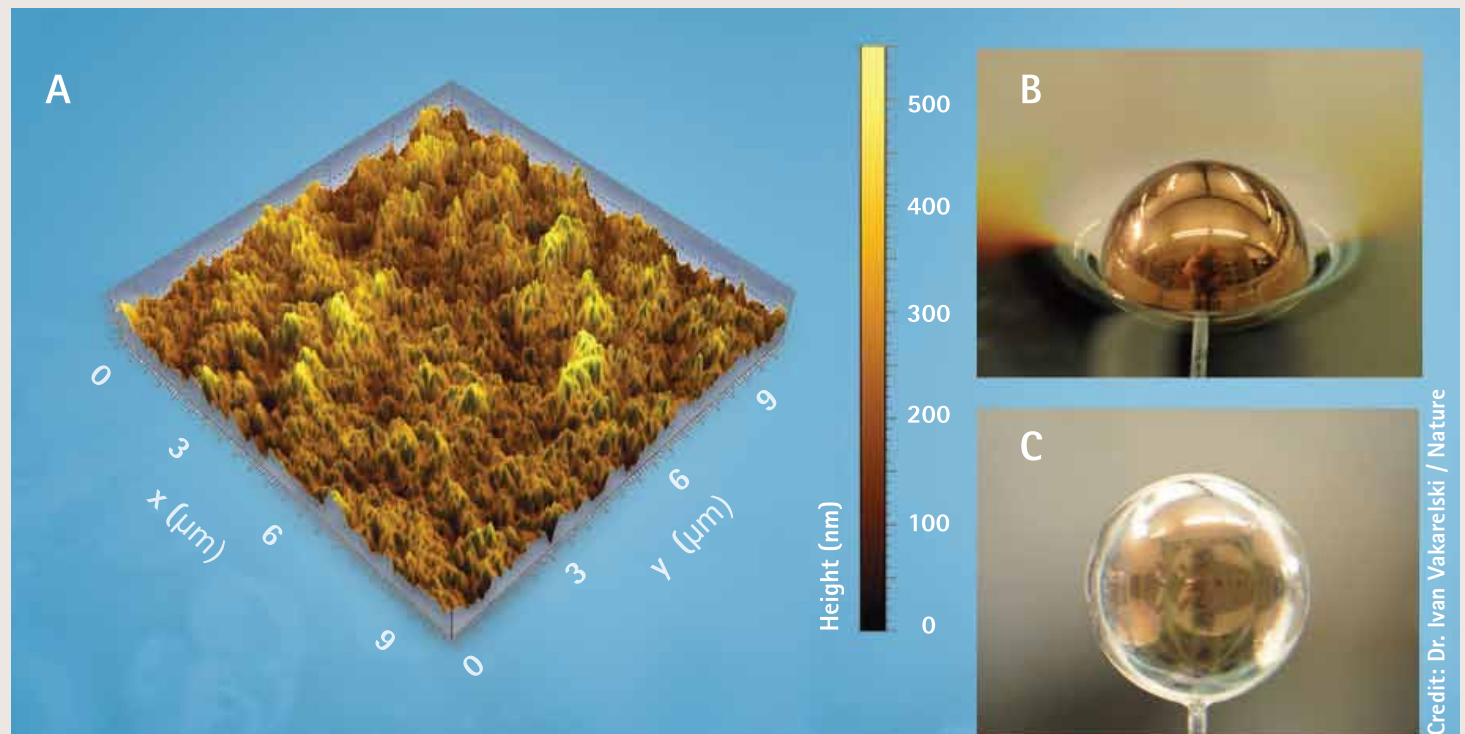
استضافت جامعة الملك عبد الله للعلوم والتقنية
عميد كلية الهندسة في جامعة ستانفورد
البروفيسور جيمس بلمر كمتحدث زائر متميز في
10 سبتمبر الماضي، وعبر رئيس الجامعة البروفيسور
تشون فونغ شيه عن سعادته الفاعمة لزيارة
البروفيسور بلمر والذي يعد باحثاً ومحاضراً بارعاً في
أفكاره ومشاريعه المبتكرة.
وشدت محاضرة البروفيسور بلمر انتباه الحضور
الذين غصت بهم قاعة المحاضرات والتي كانت
بعنوان "تعليم العلماء والمهندسين في القرن
الحادي والعشرين".
يقول البروفيسور بلمر في محاضرتة "إن المهندسين
ينقلون الاكتشافات من العلوم إلى الصناعة وعملية
نقل التقنية تمثل جزءاً من التعليم الهندسي"،
والبروفيسور بلمر هو عميد فريدريك إيمونز تيرمان
لكلية الهندسة في جامعة ستانفورد وأستاذ جون م.
فلوك في الهندسة الكهربائية.
تتمه صفحة 2

PRESIDENT'S DISTINGUISHED VISITING SPEAKER

PRESIDENT Shih was pleased to host Professor James Plummer, Dean of the School of Engineering at Stanford University, as the debut lecturer of the President's Distinguished Visiting Speaker Series for this academic year. An accomplished educator, researcher, and entrepreneur, Dean Plummer gave an engaging talk to a full lecture hall on the theme of educating scientists and engineers for the Twenty first century.

"Engineers transfer discoveries from science to industry. Technology transfer is part of an engineering education," said Dean Plummer, the Frederick Emmons Terman Dean of the School of Engineering at Stanford and the John M. Fluke Professor of Electrical Engineering. On how to interest young people in engineering careers, Dean Plummer said, "Engineers are people who work between science and industry. There is a need to teach them how to be entrepreneurial, creative, and think out of the box – something not traditionally thought of as part of an engineering education. Engineers take discoveries from science and turn them into things that are useful for people."

PROF. PLUMMER | Continued on p2



A, Three-dimensional representation of an atomic-force micrograph of a $10 \mu\text{m}^2$ region of the superhydrophobic surface coating. The combination of high surface roughness with an organic coating provides a high water contact angle, of $>160^\circ$. B, Image of the superhydrophobic sphere held on the water surface, showing the high contact angle. C, Image of the superhydrophobic sphere immersed in water. The silver-mirror sheen of the immersed sphere is due to a thin air layer retained on the sphere surface, and is the signature appearance of a Cassie state of the water adjacent to the surface.

PLAYING WITH A NATURAL PHENOMENON

RESEARCH from the University's High Speed Fluids Lab on specially engineered surfaces allowing water to boil without bubbling has been published in the journal *Nature* in September.

Dr. Ivan Vakarelski and colleagues have demonstrated that by maintaining the vapor cushion separating a hot surface from water, using a very water-repellent surface, the formation of bubbles and explosion risks are eliminated.

The Leidenfrost effect can be observed when drops of water are trickled onto a scorching skillet. The drips will initially jitter in the pan, as the liquid drops are held up by a layer of vapor. But as the temperature dips below the "Leidenfrost temperature" the vapor layer collapses, causing the liquid to boil explosively.

The novelty of the experiment by scientists Dr. Ivan Vakarelski, Dr. Jeremy Marston, Professor Sigurdur Thoroddsen; Professor Neelesh Patankar of Northwestern University; and Professor Derek Chan of Melbourne University, who collaborated in the study, is in successfully keeping the liquid away from the surface as the temperature drops to below the ebullition point of 100°C . "We've completely eliminated the nucleate boiling phase. That's the novelty of our research," says Dr Vakarelski.

Conducted entirely at KAUST's High Speed Fluids Lab led by Professor Sigurdur Thoroddsen the experimental work consisted of coating 2-centimeter wide steel spheres with a superhydrophobic surface (with strong water-repellent properties). The spheres were heated to about 400°C . As could be expected they were, at once, insulated by the resulting vapor layer. But as the spheres cooled down, the special properties of the rugged superhydrophobic coating ensured that the water remained shielded from the heated surface.

Essentially, the scientists were able to control and contain the natural heat transfer mechanism between the liquid and the surface. The applications of this new research can be manifested in the development of more efficient heat exchange devices. Different types of heat-exchange devices widely used in industrial applications include SURFACE BUBBLING | Continued on p2

أبحاث جامعة الملك عبد الله: سطح يسمح للماء بالغليان دون تكوّن فقائيع

نشرت مجلة الطبيعة "Nature" العلمية في عدد سبتمبر بحثاً يقوم به مختبر السوائل عالية السرعة في جامعة الملك عبد الله للعلوم والتقنية حول أسطح معالجة بصورة هندسية خاصة تسمح للماء بالغليان دون تكوين فقائيع. وستبرز المطبوعة الرصينة أيضاً أعمال الباحثين في الجامعة في عدد أكتوبر في آخر مقال من ثلاثة مقالات عن أعمال الباحثين في الجامعة وقد برهن البروفيسور إيفان فاكارلسي وزملاؤه أن المحافظة على وسادة من البخار تفصل السطح الساخن عن الماء باستخدام سطح طارد للماء بشدة تسمح بالحد من تكون الفقائيع ومخاطر الانفجارات.
صورة وفيديو الصفحة الرئيسية مقدمة من الدكتور إيفان فاكارلسي.
وتوضح الصورة أدناه مقارنة على الجانب الأيسر بين غليان السائل حول كرة معدنية ساخنة وعلى الجانب الأيمن سطح معالج وغليان السوائل بدون فقائيع.

ويمكن ملاحظة تأثير "لايدنفروست" عند إسقاط نقاط السائل على مقلاة ساخنة. ففي البداية تتحرك النقاط على المقلاة وتتراقص بسبب بقاء نقاط السائل مرتفعة إلى الأعلى بسبب تكون طبقة من البخار. ولكن مع هبوط درجة الحرارة تحت "درجة حرارة لايدنفروست" تنهار طبقة البخار مما يؤدي إلى غليان السائل.

والجديد في التجربة التي قام بها الدكتور فاكارلسي والدكتور جيرمي مارستون والبروفيسور سيقوردور ثورودسون والبروفيسور نيليش باتانكار من جامعة نورثويسترن والبروفيسور ديريك تشان من جامعة ملبورن الذين تعاونوا في إجراء الدراسة يتمثل في الاحتفاظ بالسائل بعيداً عن السطح بصورة ناجحة مع استمرار الانخفاض في درجة الحرارة إلى ما دون درجة الغليان البالغة 100°C درجة مئوية. ويقول الدكتور فاكارلسي أنهم تمكنوا من إلغاء مرحلة الغليان تماماً وأن هذا هو الجديد في تلك الأبحاث.

وقد تم القيام بأعمال التجارب بأكملها في مختبر السوائل عالية السرعة في جامعة الملك عبد الله تحت قيادة البروفيسور سيقوردور ثورودسون وتألفت هذه التجارب من تغليف كرتين بقطر سنتيمترين من الفولاذ بـ سطح مقاوم للبلل بشدة (مع خواص طاردة للماء). وجرى تسخين الكرتين إلى نحو 400°C درجة مئوية، أي فوق درجة حرارة لايدنفروست. وكما هو متوقع تم عزل الكرات فوراً بالطبقة الناتجة من البخار. ولكن ومع استمرار انخفاض درجة حرارة الكرتين ضمن الخواص الخاصة للسطح الخشن من التغليف المقاوم للبلل بشدة بقي الماء مغلفاً بحجاب واق من السطح الساخن.

وبذلك تمكن علماء الجامعة بصورة جوهرية من التحكم في الآلية الطبيعية
تتمه صفحة 2

OUR diverse community came together on September 23 in a joyful celebration of the National Day of Saudi Arabia – currently home to us all.

The University has settled into its fourth year of dynamic teaching and research of excellence, the latter borne out by the papers published in recent journals of note as described in this issue of *The Beacon*. The research is diverse and includes playing with the natural phenomenon of boiling in the High Speed Fluids Lab and examining

the ear bones of Red Sea snappers to establish their migratory patterns. One of our younger faculty members has been invited to join an editorial board of stature – acknowledging his expertise and leadership in the field.

KAUST is honored that its Research Park was chosen for an international award, recognizing its mission of economic development, technology transfer, and the creation of entrepreneurial opportunities within Saudi Arabia. □

—THE BEACON Editorial

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STANDING: RICHARD K. JOHNSON (LEFT) AND MOHAMED BA-ESSA (RIGHT) SEATED: PROF. KHALED NABIL SALAMA (LEFT) AND PROF. MOHAMED-SLIM ALOUINI (RIGHT)

IN BRIEF

KAUST DIGITAL ARCHIVE: A PERMANENT HOME FOR RESEARCH

THE University Library has recently launched a digital repository that aims to bring together all of the University's intellectual capital. The KAUST Digital Archive, available at archive.kaust.edu.sa, is the official archive for all the University's theses and dissertations. "This entails capturing, preserving, and providing access to the main product of the institution—its research," said KAUST Digital Archive Administrator, Mohamed Ba-Essa.

University Library Manager, Richard K. Johnson, points out: "One of the factors used in university ranking is the influence of an institution's research." He adds, "When works are openly accessible on the internet, they get more citations."

Faculty and researchers have the option of making their work freely available on the web or to restrict content to KAUST-only access.

Maintaining an institutional repository has added usefulness for recruiting purposes. Prospective students and postdocs now have a way of readily seeing the work being done in KAUST labs.

As the KAUST Digital Archive develops, the goal is for it to be a multi-dimensional resource where, in addition to text materials, various forms of data and multimedia are available. Such information can be accessed by other researchers for years to come. □

THE KAUST SCHOOL'S CLASS OF 2012

THE KAUST School celebrates their first Diploma cohort's achievement in the IB examinations. The graduates achieved a Diploma average of 30.1 points out of 46, beating the worldwide average of 29.83 points. This is a tremendous achievement for the School's first IB Diploma cohort. Well done! □

FOSTERING COMMUNITY SPIRIT – THE THUWAL AND QADIMAH SCHOOL KIT FUNDRAISER

THE recent Thuwal and Qadimah School Kit Fundraiser was a KAUST social responsibility project that received generous community support. The donated gift vouchers were used to buy school supplies for children in neighboring villages. Together with contributions from Tamimi Market, Banaweer, and the University, the collective donations helped to provide back-to-school kits for 522 students attending nine schools in Thuwal and Qadimah. The gesture received a warm welcome and many smiles from the children and their teachers. □

مجتمع الجامعة يتبرع بـ 522 حقيبة لطلاب ثول والقضية

نظمت جامعة الملك عبدالله للعلوم والتقنية، مؤخراً، حملة تبرعات تهدف إلى توفير الحقيبة المدرسية لطلاب ثول والقضية، وذلك تجسيدا لمشروع المسؤولية الاجتماعية في الجامعة والذي حظي بدعم سخّي من مجتمع جامعة الملك عبدالله. واستخدمت قسائم الهدايا المتبرع بها لشراء اللوازم المدرسية للأطفال بالتعاون مع أسواق التميمي ومؤسسة بانوير التجارية والجامعة حيث هيأت التبرعات بعد جمعها العون والمساعدة في توفير حقيبة العودة للمدارس لنحو 522 طالبا في ثول والقضية، وقد استقبلت هذه التبرعات من طلاب القرى المجاورة ومعلميهم بالسعادة والسرور. □

تابع: أبحاث جامعة الملك عبدالله

لانتقال الحرارة بين السائل والسطح واحتوائهما. وتشتمل التطبيقات الهامة الأخرى للأبحاث الجديدة في تطوير أجهزة أكثر كفاءة في التبادل الحراري .

ومن التطبيقات الهامة الأخرى تقنية خفض قوة السحب إلى الورا التي تنطبق على سبيل المثال على القطع البحرية. ويشرح الدكتور فاكارسكي أيضا أن خفض قوة السحب لما تطبيقات مفيدة في المملكة من خلال تحسين كفاءة جريان وتدفق السوائل عبر خطوط الأنابيب، فعندما تتدفق السوائل عبر خطوط الأنابيب فإن وضع مواد التغليف هذه يمكن أن تحد من قوة الجر إلى الورا أثناء عملية النقل. وبناء على نتائج الدراسة الحالية فان توجه الباحثين في المستقبل يتمثل في استكشاف الانتقال المرحلي الذي يحدث هلى الأسطح



FROM RIGHT TO LEFT: DR. IVAN VAKARELSKI, PROFESSOR SIGURDUR THORODDSEN, AND DR. JEREMY MARSTON

layer by textured superhydrophobic surfaces. *Nature*, 489 (7415), 274–277.

2. Marston, J. O., Vakarelski, I. U., Thoroddsen, S. T. 2012, Cavity formation by the impact of Leidenfrostspheres, *J. Fluid Mech.*, 699, 465-488.

3. Vakarelski, I. U., Marston, J. O., Chan, D. Y. C. Thoroddsen, S. T., 2011, Drag reduction by Leidenfrost vapor layers, *Phys. Rev. Lett.*, 106, 214501.

تابع: بلمر محاضرا زائرا

ولفت البروفيسور بلمر انتباه الشباب للوظائف الهندسية حيث يقول: " المهندسون هم أناس يعملون بين العلوم والصناعة وليس هناك ثمة حاجة لتعليمهم كي يكونوا من أصحاب الأفكار والمشاريع المبتكرة أو مبدعين أو مفكرين خارج الأطر المألوفة، وهي الجزئية التي لم تكن تشكل، تقليدياً، جزءاً في التعليم الهندسي. فالمهندسون ينطلقون بأخذ اكتشافاتهم من العلوم وتحويلها إلى أشياء مفيدة للناس". وفضلا عن ذلك تحدث البروفيسور بلمر عن التخصصات المتعددة المتداخلة والتعليم على الإنترنت والتعليم المستمر مدى الحياة كخواص مميزة للتعليم العلمي والهندسي في القرن الواحد والعشرين. وبشكل التعلم مدى الحياة اليوم مظهراً ثابتاً في التعليم لأن المعارف الهندسية تتغير وتتبدل بمعدلات سريعة. وذكر أن التقديرات تشير إلى أن مدى حياة أية معلومة يتعلمها الشخص يتراوح بين ثلاث وخمس سنوات ولذلك فلا بد أن يكون التعليم الفني المستمر جزءاً لا يتجزأ من

learners will self-organize in social networks. "On the internet you can find class notes, lectures on any topic, and from all over the world including top-tier universities," he said. Many courses in the future will be short in duration. "Technology is changing quickly," said Dean Plummer. "Companies think of innovation as the way to win in a globally competitive environment. Practicing engineers don't have the luxury of taking a quarter or semester course to gain new knowledge, so this is why they go to the internet to learn these things. This is the landscape that's changing." □

الصلبة مثل تشكل الثلج والجليد. وتشمل التطبيقات في هذا المجال تحسينات محاليل المضادة لتشكل الثلوج على هياكل الطائرات.

وقد توفر للفريق وتجاربه الدعم والمساندة من مرافق ورش الآلات والورش الالكترونية والتصنيع المتقدم بتقنية النانو والمختبر المركزي للتصوير والتوصيف في الحرم الجامعي. □

للمزيد من المعلومات:

Stabilization of Leidenfrost vapour layer by textured superhydrophobic surfaces
Ivan Vakarelski et al, *Nature* 489, 274–277 doi:10.1038/nature11418 (2012)

SURFACE BUBBLING | *Continued from p1*

coolants in nuclear plant facilities and aircraft engine heat-exchangers.

Another important application is drag-reduction technology, as applied to marine vessels for example. As Dr. Vakarelski explains, drag-reduction also "has useful applications for the Kingdom through improving the efficiency of pipe flows. When liquids flow through pipes, putting such coatings can reduce drag during transport."

Building upon the present study, the researchers' future direction will explore phase transitions happening on solid surfaces such as ice and frost formations. Applications include advancements in anti-ice and anti-frost solutions for aircrafts and collecting dew and condensation in remote desert areas.

The team's experimental work was also supported by the campus Machine Workshop, Electronics Workshop, and the Advanced Nanofabrication, Imaging and Characterization Core Lab facilities.

The *Journal of Fluid Mechanics* is also highlighting the KAUST researchers' work in their October issue, the latest of three front-page feature articles. □

Further Information

1. Vakarelski, I. U., Patankar, N. A., Marston, J. O., Chan, D. Y. C., Thoroddsen, S. T. (2012). Stabilization of Leidenfrost vapour

مجموع ما تعرضه وتوفره كليات الهندسة من تعليم.

وستكون معظم عمليات التعليم المستمر عن طريق الإنترنت وسيُنظم المتعلمون أنفسهم في شبكات التواصل الاجتماعي. ويقول البروفيسور بلمر "إن الشخص يمكنه العثور على المعلومة والمذكرات والمحاضرات حول أي موضوع من شبكة الإنترنت بل من جميع أنحاء العالم، بما في ذلك الجامعات الرائدة. ومعظم الدورات الدراسية في المستقبل ستكون قصيرة الأجل لأن التقنية تتغير بشكل سريع"، مؤكداً أن "الشركات تنظر إلى الابتكار كوسيلة وأداة في بيئة المنافسة القوية عالمياً.

والمهندسون الممارسون لا تتوفر لهم رفاهية أخذ دورات دراسية لربع فصل أو فصل دراسي بغرض اكتساب معارف جديدة ولذلك يلجؤون إلى الإنترنت لتعلم هذه الأشياء، وهذا هو التغيير الذي يحدث الآن". □

<http://designprogram.stanford.edu/>

PROF. PLUMMER | *Continued from p1*

In addition, Dean Plummer spoke of transdisciplinarity, online education, and lifelong learning as characteristic features of scientific and engineering education in the twenty-first century.

Lifelong learning is now a permanent feature of education. This is because engineering knowledge changes at a rapid rate. "It's been estimated that the half-life of everything you'll learn here is three to five years," he said. "Ongoing and continuing technical education must be part of what an engineering school offers."

Much of continuing education will be delivered online and

TAILOR-MADE FUELS FROM BIOMASS

PROFESSOR MANI SARATHY AT WORK



A RECENT lecture by Professor Mani Sarathy, Assistant Professor of Chemical Engineering, illustrated research collaboration between KAUST and the Tailor-Made Fuels from Biomass (TMFB) Center of Excellence at Aachen University, Germany. In his presentation, Prof. Sarathy showed how combustion chemistry modeling at the KAUST Clean Combustion Research Center is performed in cooperation with Germany's TMFB to rapidly screen and select candidate next generation biofuels for large-scale production and engine testing.

First-generation biofuels, such as bioethanol and biodiesel, are limited in their ability to displace large quantities of conventional petroleum fuels. Next generation biofuels with improved production yields and better combustion performance are required. Germany's TMFB Center of Excellence combines expertise in bio-fuel production and combustion to design next-generation biofuel

technologies. The molecular structure of a biofuel largely depends on its biomass feedstock; however, tailoring the production process can yield molecules with ideal combustion properties.

Molecules within bio-fuels are noticeably different in structure from the hydrocarbons in petroleum fuels. Predictive tools for determining effects of molecular structure on combustion and emissions are developed by bridging the fundamental fields of quantum chemistry, thermo-chemistry, reaction kinetics, and transport phenomena. Prof. Sarathy presented the development and application of combustion chemistry models for several tailor-made fuels from biomass, including bioethers, bioalcohols, and biofurans. The acquisition of experimental data was also discussed. The validated models are employed to understand combustion performance in practical engine applications. □

ECONOMIC DEVELOPMENT GUEST LECTURER: THE PATH TO GRID PARITY FOR SOLAR ENERGY

DURING the past three years, the solar and photovoltaic (PV) energy industry has seen rapid and sometimes exciting changes and developments. These changes have resulted from discoveries in basic materials science, cell efficiency records that seem to change every few weeks, and rapid falls in the price of power resulting from technological development. While no doubt stressful for those inside the industry, it has been interesting to follow these changes from the outside.

First Solar of Santa Clara, California, is the largest manufacturer of solar power plants in the world. The company recently announced that the Agua Caliente solar project has achieved a peak generating capacity of 250 megawatts (MW) AC connected to the electrical grid. The project, which is under construction in Yuma County, Arizona, is currently the world's largest operating PV power plant and will have a generating capacity of 290 MWAC when completed.

KAUST Industry Collaboration Program (KICP) and the Technology Application and Advancement Group (TAAG) hosted Raffi Garabedian, Chief Technology Officer at First Solar, who spoke about the future of thin film PV energy. Said Mr. Garabedian, "At 12 to 15 cents per kilowatt-hour, the price of

photovoltaic power is below the price of gas-fired electricity and on a par with a modern coal-fired plant."

First Solar is the only manufacturer of Cadmium Telluride (CdTe) photovoltaic film in the world. "First Solar has the smallest carbon footprint among the major manufacturers," says Mr. Garabedian.

First Solar has partnered with the Frank Lloyd Wright Foundation to supply 250kW (AC) of solar power energy to Taliesin West as part of Energizing Taliesin West in Arizona. The solar panels will help Taliesin West achieve its goal of becoming a self-sustaining "net zero" energy customer, enabling it to produce as much energy annually as it consumes. □

Scientists have long known that the Sun sends out nearly as much energy in a day as is contained in all known reserves of coal, oil, and uranium. If harnessed, solar energy can fulfill all mankind's energy needs for the foreseeable future.

– Bell Labs, 1954, on the advent of the first commercially PV module

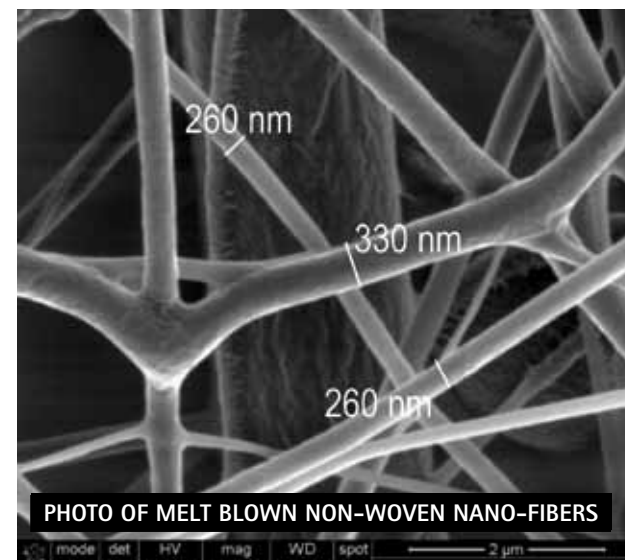


PHOTO OF MELT BLOWN NON-WOVEN NANO-FIBERS

DOW LECTURE SERIES LAUNCHED

A MEMBER of the KAUST Industry Collaboration Partnership (KICP) from the inception, Dow has established a strong research partnership with KAUST. In the framework of this partnership, Dow is bringing several high level researchers to visit and present their work at KAUST. The aim is to give presentations and seminars on research topics and to stimulate further scientific interactions and exchanges. The talk by Professor Dr. Rudy Koopmans of Dow Europe GmbH, was the first in this series, entitled, "Self-Assembling Polymers: Breaking the Plastics Processing Paradigm."

Proteins, carbohydrates, DNA and RNA, as well as lipids are examples of nature's self-assembling polymers. They take advantage of secondary bonding mechanisms such as dipole-dipole, van der Waals, or π - π interactions to create structure and an amazing variety of materials with diverse functionalities. In his lecture, Prof. Koopmans illustrated how learning from nature can inspire synthetic polymer chemists and materials scientists in the development of novel industrially viable plastics.

As an example, segmented block copolymers enable the development of novel products addressing different applications. By making relatively low molar mass molecules (5000 – 10,000 g/mol), very low viscosity, easy flowing melts can be produced that upon solidification induce a phase separation followed by a "locking-in place" of the hydrogen-bond forming segments. The latter ensures a strong molecular association that produces plastics with mechanical properties comparable to high molar mass polymers. The combination of easy flow with tough material properties allows the exploration of processing technologies such as solvent free electrospinning or melts blown non-wovens making nanofiber production industrially attractive. This synthetic approach, possibly combined with nature's self-assembling polymers, is an example of the first steps of industrially implementing some learnings from nature in building up structure "from the bottom up." □



▲ DR. TIMOTHY WOOD, HEAD OF GLOBAL WATER AND PROCESS SOLUTIONS



▲ DR. RICK STRITTMATTER, HEAD OF GLOBAL MICROBIAL CONTROL

DOW LECTURE: SOLUTIONISM

"When we think about innovation we think about what are the core competencies that we're going to focus in that will be our strengths that will allow us to solve problems."

– Rick Strittmatter, Head of Global Microbial Control at Dow

THE second event in the Dow Lecture series featured Dr. Timothy Wood, head of Global Water and Process Solutions, and Dr. Rick Strittmatter, heading Dow's Global Microbial Control business.

Both speakers placed a major emphasis on Dow's commitment to applying technology to solve challenging world problems. With one in seven Dow employees working in R&D as application scientists across 15 markets, the company's focus is on market-driven application science. A major part of this philosophy involves collaborating with research partners such as KAUST, as Dr. Strittmatter elaborated:

"If you are doing research in Dow, and especially in Dow Microbial Control, a big part of your research is not going into the lab. It's actually

going into other people's labs. Going to university labs and going into labs of partners and working, doing your research through other institutions."

In response to an audience member's question about where the human element fits into Dow's definition of innovation, Dr. Timothy Wood explained that Dow's new tagline is "solutionism." The theme of solutionism involves thinking less about the products they make and more about the problems they are solving. "We're looking for problems that are significant, big problems to bring new ideas and new solutions to bear on," added Dr. Wood.

Some of these solutions Dow has been involved in include a wide range of innovations across agrosience, health care, nutrition, making energy more accessible, and improving water processing. The latter has been of particular importance to KAUST and the Kingdom.

Dow's commitment to innovation, demonstrated by its over \$100 million US investment in high through-put research, will find a suitable home in its future R&D center at KAUST.

Watch for more lectures this month, as the Dow Lecture Series continues. □

THE COMMUNITY OF KAUST

AS we engage and collaborate with our colleagues, we know we'll find those with unique skills. Our peers may be exceptionally talented within their scientific field, but could they also be adept with a potter's wheel or cricket bat?

KAUST is a global university, but it is also a community. We are here with our families to explore and to gain new experiences – and we do that even after office hours.

Self-Directed Groups (SDGs) are organized and run by KAUST

community members, and supported by Facilities and Community. The purpose of SDGs is to encourage, promote, and sponsor special events, entertainment programs, and recreational and educational activities for the benefit of its members and the KAUST community. To find out how to start a new SDG or to find out more about the existing SDGs, contact the Recreation Help Desk at 808-6616 or email recreation@kaust.edu.sa.

ART GROUP

The Art Group's goal is to create an Art Center for the KAUST community. The Art Center will be both a community hub for art related events, classes, and workshops, and a place where group members can work on their own projects. The Art Group will cover activities including painting, drawing, mosaics, textiles, jewelry making, and ceramics. The Art Group welcomes members from all age groups, and aims to provide activities to all interested members of the KAUST community. Contact: kaust-art-group@googlegroups.com

BOY SCOUT TROOP 13

The KAUST Boy Scout Troop 13 operates through an ethos of service and adventure learning. The troop is dedicated to activities that provide scouts the opportunity to respect and explore our host country and link rugged outdoor experiences with a life-changing ethic of service. Troop 13 has 24 scouts in grades 6-11 and meets weekly at the Garden Secondary School. The troop is typically out exploring and camping in the wild expanse of Saudi Arabia once a month and is always ready to lend a helping hand. Contact: scott.herrington@kaust.edu.sa

CRICKET CLUB

The Cricket Club offers KAUST community members a chance to have fun while exploring the game of cricket. The Club provides members with excellent facilities and programs, and encourages all levels of participation in the sport and related activities. The Club meets on Sundays and Mondays at 7:00 p.m., and takes part in events such as super sixes in Harbor Sports Club Arena. The Club will also participate in the upcoming Winter Enrichment Program (WEP). The Club has more than 30 members playing at different levels, and is keen to teach those new to the game. Contact: kaustcricketmembers@kaust.edu.sa

CYCLE CLUB

The objectives of the KAUST Cycle Club are to: Promote all forms of cycling within the KAUST community, for health-promotion, social, recreational, and competitive purposes; Ensure an environment emphasizing safety, responsible actions, good sportsmanship, and self-discipline; Support members in any matters related to cycling, including maintenance and the acquisition of equipment; and Organize club social activities.

Club members prefer riding their bikes to having meetings. Many members ride around campus

on their own or in small, self-organized groups. Scheduled organized rides are:

Saturdays at 5:50 p.m.

Mountain bike ride (intermediate) 60 minutes
Starting from the Harbor Sports Club

Tuesdays at 5:50 p.m.

Mountain bike ride (intermediate) 60 minutes
Starting from the Harbor Sports Club

Tuesdays at 5:50 p.m.

Bike ride (beginner) 45 minutes

Starting from the Harbor Sports Club

There are also regular longer mountain bike rides during weekends. Contact: Cecil.murray@kaust.edu.sa

GIRL SCOUTS

The KAUST Girl Scout Council SDG governs and supports girl scout troops for the KAUST community. There are currently four troops active at KAUST for girls from grades 1 through 8. The troops are affiliated with the USA Girl Scouts Overseas. Girl Scouting is an international movement, open to all girls and young women regardless of religion, ethnic group, or background. Girl Scouting seeks to build girls of courage, confidence, and character, who make the world a better place. In past years, one of the highlights of the scouting experiences has been campouts at the stadium and beach. The KAUST Girl Scouts are actively seeking volunteers, and it always open to new members. The most pressing need is one or more female volunteer troop leaders for a Senior-Ambassador level troop (grades 9-12); training and mentoring is provided. Direct inquiries can be made to the KAUST Girl Scout Council SDG at kaust-girlscouts@gmail.com.

GREEN GROUP advocates for the sustainable development and operation of the community. Did you know that the KAUST community uses 3,000 plastic grocery bags PER DAY? One of many projects of this group aims to reduce consumption of single use disposable plastics across the campus and community.

Green Group started in 2009 with a mission to promote and advocate for eco-friendly, sustainable living at KAUST by:

- Fostering ecological responsibility
- Holding informative events and workshops
- Organizing organic community gardening
- Pursuing enhanced organic food options
- Advancing environmental wellness

The Green Group seeks to engage with all community members to make KAUST a sustainable place to live and work. Contact: KAUSTGreenGroup@gmail.com or www.facebook.com/KAUSTGreenGroup

KENNEL AND VETERINARY ASSOCIATION

The objectives of this new SDG are to: provide for the care, health, and security of KAUST pets; provide veterinary, boarding, pet education, and personalized care services; and to strive for continuous improvement in the quality and standard of pet services offered. Contact: kaustkennels@kaust.edu.sa

MUSICIANS CLUB

The purpose of KAUST Musicians and Events SDG is to organize community members with general interest in music and organizing live entertainment events for the community. The primary objective is to organize a wide range of events – comedy shows, talent shows, live music (modern & traditional), art exhibitions, film screenings as well as other music related services including music lessons, musical equipment rental and supplying musical goods for the community. The group is currently arranging to open a lounge area that shall serve as the main hangout spot and attraction for community members. Contact: anan.sabban@kaust.edu.sa

PHOTOGRAPHY CLUB

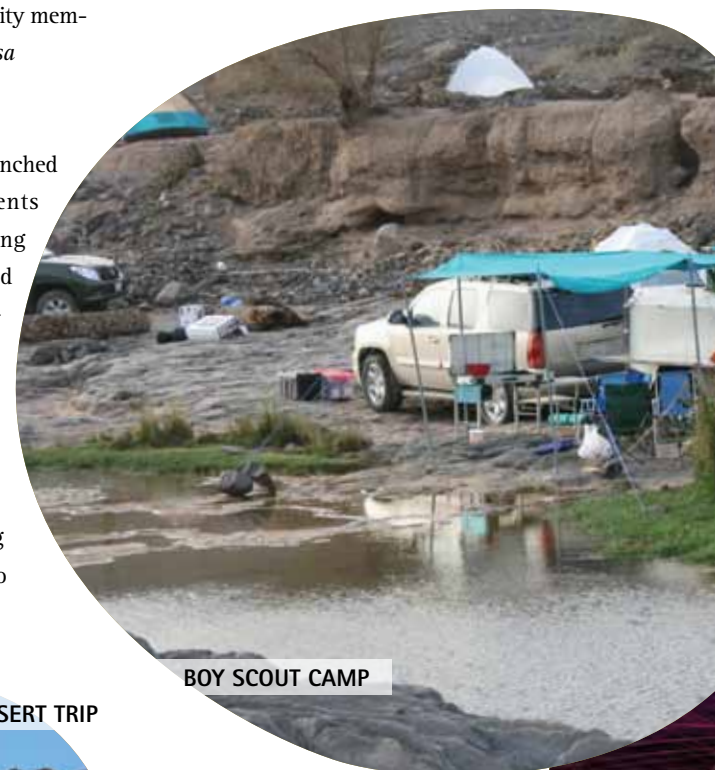
The KAUST Photography Club has launched its most ambitious program of events yet for fall 2012. It includes a Starting Photography course for beginners and photo competitions as well as a variety of events with guest speakers and photo excursions outside KAUST. Some of the 28 workshops offered last year were so popular, a re-run is scheduled of topics like Splash Photography and Water in Motion, Light Painting and Photographing Flames, and Studio Photography.



If you wish to join the Club, visit http://bit.ly/sdg_signup, or email photography.sdg@kaust.edu.sa.

ULTIMATE FRISBEE CLUB

KAUST Ultimate Frisbee Club offers community members the chance to have fun, meet new people, and spread the KAUST spirit and culture. No experience is necessary and club members are happy to teach people how to play Ultimate. The club meets from 7:30 - 9:00 p.m. on Saturdays and Tuesdays at Thuwal Park (Safaa Island) Field 3. The Club sponsors an annual Ultimate tournament and clinic as well as a Disc Golf tournament during WEP. KAUST Ultimate members have also participated in the Dubai Ultimate Charity Event. Contact: scott.herrington@kaust.edu.sa



BOY SCOUT CAMP



PHOTOGRAPHY SDG DESERT TRIP

GRADUATE STUDENT GROUPS

AS with most universities, KAUST has a vibrant and active campus offering students a host of interest groups and student chapters to enrich their graduate experience. Campus life for a KAUST graduate student is greatly enhanced through these various opportunities:

AMATEUR ASTRONOMY ASSOCIATION

The purpose of this group is to promote, through interactive programs and activities, a knowledge and appreciation of astronomy. The group undertakes astronomical observations, seminars, talks, meetings, and educational events held in conjunction with community groups. Contact: lakshmi.selvakumaran@kaust.edu.sa

ARCHAEOLOGY SOCIETY

Archaeology examines the breadth of human experience to teach us more about our origins, our cultures, and ourselves. Archaeology sources both science and humanity. This group's members indulge their curiosity about global cultures and past civilizations. Contact: casey.zakroff@kaust.edu.sa

BADMINTON

The Badminton group aims to conduct regular sessions for the graduate student community to both learn and enjoy badminton. The association holds beginners sessions and regular tournaments in the Harbor Sports Club. Contact: alloysius.wong@kaust.edu.sa

CULTURE & LANGUAGE EXCHANGE

This group provides a program of events and activities during the academic year to enable graduate students to experience the diverse culture of the graduate student community. Events and programs include live music, art displays, talks, exchanging ideas, and sampling food from around the world. The group organizes a series of language lessons in Arabic, French, Chinese, Italian, and Spanish, taught by graduate students and staff members. Contact: saad.alrawaf@kaust.edu.sa

THUWAL DIVERS

Thuw al Divers aim to provide a platform to promote and enjoy the Red Sea in a safe, educational, and environmentally-aware way. Its activities mainly include snorkeling and scuba diving. Contact: pedro.torre@kaust.edu.sa

THEATER TROUPE

The purpose of this group is to promote drama among the graduate student community. It stages one full-length play and shorter productions throughout the year. Plays are very popular and very well attended by the community, such as the latest production, the Agatha Christie play *And Then There Were None*. Contact: daniel.bingham@kaust.edu.sa

ENGINEERS WITHOUT BORDERS

Engineers Without Borders aims to support high-impact engineering projects in the local region by combining community-driven ideas with student design. The group provides underserved communities with cost-efficient and sustainable projects aimed at improving the standard of living of its individuals. Students hope to gain real experience on projects in a wide range of engineering disciplines that promote a sense of responsibility. Contact: philip.danser@kaust.edu.sa

UNIVERSITY FOOTBALL ASSOCIATION

This group aims to promote football among the graduate student community and to assist in the organization of an intramural indoor football league. The group has recently been re-organized with the objective of establishing a football team to represent the University (called Discovery) and to further build community among graduate students. The group welcomes other community members to join and participate in the weekly training sessions. Contact: mustafa.mousa@kaust.edu.sa

GRADUATE ASSOCIATION OF MUSICIANS (GAM)

This group aims to promote music among the graduate student community. It assists in the coordination of bookings for the Music Room and organizes regular practice sessions and music lessons. Members often perform at key Graduate Services' sponsored and Graduate Council events. Contact: alloysius.wong@kaust.edu.s

TOASTMASTERS

Toastmasters aims to provide a mutually supportive and positive learning environment in which every individual member has the opportunity to develop



communication and leadership skills, which in turn foster self-confidence and personal growth.

This group holds a weekly session to practice public speaking and leadership in a friendly and supportive atmosphere with constructive feedback. The group won a number of regional competitions in the last academic year and was the first student-led group to be established at KAUST. Contact: klemens.katterbauer@kaust.edu.sa

WOMEN'S FOOTBALL

This group's purpose is to provide the means for female students to learn, practice, and enjoy football on a regular basis with the general aim of promoting wellness, physical, and mental health, as well as a means of stress relief and building camaraderie. Contact: maha.khalil@kaust.edu.sa

UNDERWATER PHOTOGRAPHY

This group aims to document the biodiversity of the Red Sea in order to increase awareness of this unique environment. The group holds regular trips, provides instruction in the use of underwater photography equipment, and presents exhibitions of its photographs. Contact: maha.khalil@kaust.edu.sa

IKRAM (VOLUNTEERING)

To assist each member of the graduate student community, this group reaches out to the local and campus communities. In so doing, members discover the benefits of volunteering to support a noble cause. Contact: tariq.malas@kaust.edu.sa

UNIVERSITY BASKETBALL ASSOCIATION

This group promotes basketball among the graduate student community and organizes intramural basketball leagues and tournaments. Community members are welcome to join the group and participate in its activities. Contact: mohd.khan@kaust.edu.sa

MIND THE GAP

This group aims "to use your mind to complete the gap between now and a better world." It holds weekly meetings and seminars to solve worldwide problems, suggest practical solutions, and aims to improve people's lives in an atmosphere of enjoyment, learning, and reward. Contact: guyolivier.ngongangndjawa@kaust.edu.sa

DUNES GOLF SOCIETY

This group promotes the game of golf among the graduate student community. It organizes regular practice sessions, especially for beginners,

and a series of tournaments throughout the academic year at the Safaa Golf Club. Contact: patricio.liquealanis@kaust.edu.sa

UNIVERSITY CHAPTER ORGANIZATIONS

Several student chapters are chartered at KAUST. These groups promote the professional development of its members through its programs, relations with other student chapters, and with its parent organization.

AACE (AMERICAN ACADEMY OF ENVIRONMENTAL ENGINEERS)

Contact: enas.yunis@kaust.edu.sa

ACM (ASSOCIATION FOR COMPUTING MACHINERY)

AICHE (AMERICAN INSTITUTE OF CHEMICAL ENGINEERS)

Contact: klemens.katterbauer@kaust.edu.sa

IEEE (INSTITUTE OF ELECTRICAL & ELECTRONIC ENGINEERS)

Contact: imran.ansari@kaust.edu.sa

IET (INSTITUTION FOR ENGINEERING & TECHNOLOGY)

Contact: imran.ansari@kaust.edu.sa

SPE (SOCIETY OF PETROLEUM ENGINEERS)

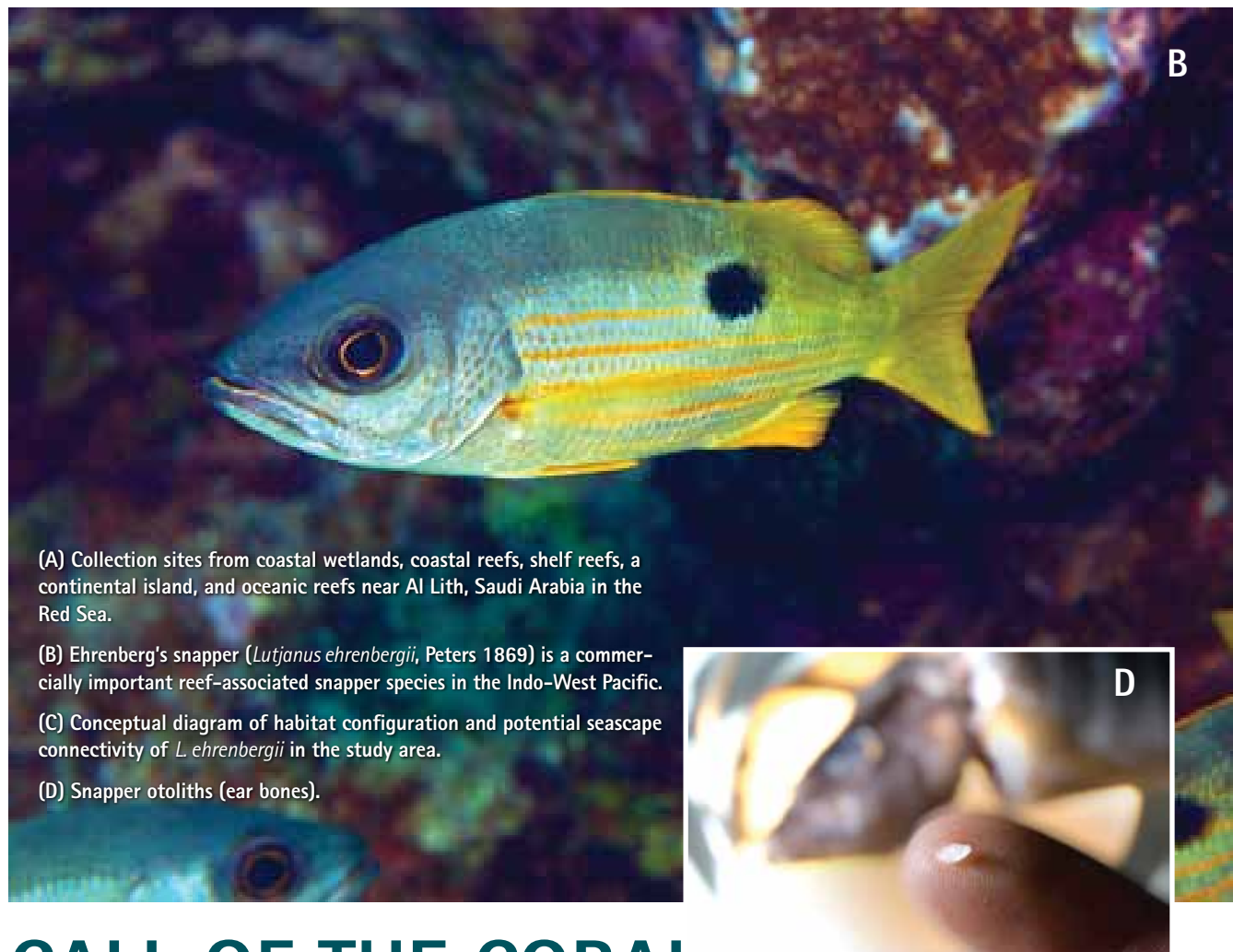
Contact: ahmad.kadoura@kaust.edu.sa □



ULTIMATE FRISBEE, PHOTO: BAHIR SKINNER



SDG Website

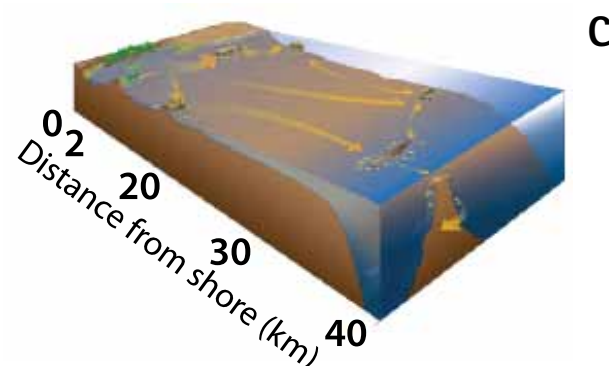


(A) Collection sites from coastal wetlands, coastal reefs, shelf reefs, a continental island, and oceanic reefs near Al Lith, Saudi Arabia in the Red Sea.

(B) Ehrenberg's snapper (*Lutjanus ehrenbergii*, Peters 1869) is a commercially important reef-associated snapper species in the Indo-West Pacific.

(C) Conceptual diagram of habitat configuration and potential seascape connectivity of *L. ehrenbergii* in the study area.

(D) Snapper otoliths (ear bones).



CALL OF THE CORAL: REEF FISH MIGRATIONS REVEALED

A RECENT study may help to inform future development on the Red Sea coast. KAUST researchers Professor Michael Berumen and Dr. Kelton McMahon of the Red Sea Research Center worked with their Woods Hole Oceanographic Institution (WHOI) partners, including co-author Dr. Simon Thorrold, in a successful collaboration to investigate the movements of coral reef fishes. The findings, published in *Proceedings of the National Academy of Sciences* (<http://www.pnas.org/content/early/2012/08/29/1206378109>), have important implications for the management and protection of coral reefs and other marine environments.

The team developed a quantitative method of assessing habitat use and movement of fish in order to determine the relative importance of different nursery habitats. They examined the migratory patterns of an important local snapper species (*Lutjanus ehrenbergii*) by careful examination of adult otoliths (ear bones). In the same way that tree rings can tell a history of weather patterns, the ear bone is a chemical address book recording the individual's movements and providing information that can identify with a high degree of accuracy the habitat that the fish occupied as a juvenile.

The team analyzed isotopic signatures using gas chromatography in cutting edge technology that traced what the fish ate to a particular food web to reconstruct the juvenile habitat associations of these ecologically important fish. They were surprised to discover that the nurseries, which include shoreline mangroves and island seagrass, can be many miles away from the coral reefs where the adult fish are found. It has been observed that the juvenile snapper in the coastal habitats never exceed 12 cm, which means that the young fish undertake a remarkable and perilous journey of up to 20 km out to the reef when they are this size or even smaller. Sometimes these fish are moving across water more than 600 m deep. "Migration activity was far greater than we originally anticipated," says McMahon. "That was, for me, the most surprising finding."

However, these fish show remarkable flexibility as the study further demonstrated that not all snapper are obliged to use the coastal wetlands, as others had directly settled on the reefs and on a continental island some miles from the coast. The study makes clear that fish movements are more complex than a linear model of coastal fish moving out onto reefs.

These findings have implications for coastal development. It seems that it is not enough simply to preserve the adult habitat - the coral reefs. Human activity that could lead to the destruction of mangroves and seagrass habitats along the shores of the Red Sea, such as the construction of a hotel complex or an aquaculture development, could significantly impact the numbers of adult snappers on the reef. "We must protect the source habitats that supply the offshore reefs, including mangrove and seagrass bays, as well as the migration corridors necessary to connect these essential habitats," says Dr. McMahon. These data are critical for the design of effectively networked marine protected areas.

Many questions remain unanswered. Why would juvenile fish take such a seemingly arduous and dangerous trip across deep open water to get to oceanic reefs? Do they travel alone or in schools? How do they navigate to these reefs and exactly what routes do they take? What are the benefits of such journeys and how does it impact population dynamics? "These are fascinating questions that will keep us busy for years to come, but they are important questions to answer if we are going to truly understand how to effectively manage our coastal resources," says Prof. Berumen.

The researchers from the KAUST/WHOI partnership look forward to tackling such questions and others in future collaborative research. Dr. McMahon is the first joint appointment by the institutions and the equipment for this study, housed at WHOI, was funded by KAUST as part of the first GCR special partnership launched by KAUST in 2007. □

مركز أبحاث البحر الأحمر في جامعة الملك عبد الله يبحث في تحركات أسماك الشعاب المرجانية

عمل باحثا جامعة الملك عبد الله للعلوم والتقنية البروفيسور مايكل بيرومين والدكتور كيلتون ماكماهون من مركز أبحاث البحر الأحمر مع شركائهم من معمد وودز هول لعلوم البحار، بما فيهم المؤلف بالشراكة الدكتور سايمون ثورولد، في تعاون ناجح لتقصي حركات أسماك الشعاب المرجانية. وتتضمن النتائج التي نشرت في مطبوعة (إجراءات) الأكاديمية الوطنية للعلوم آثاراً مهمة للإدارة وحماية الشعاب المرجانية والبيئات البحرية الأخرى، وهي الدراسة التي من المتوقع أن تساعد على توفير معلومات عن التطورات المستقبلية على ساحل البحر الأحمر.

طور الفريق طريقة كمية لتقدير استخدام الموطن وحركة الأسماك لتحديد الأهمية النسبية لمواقع المشاتل المختلفة. وقد قاموا بفحص الأنماط المهاجرة من فصيلة هامة من سمك الحمرة المحلي (لوتيانوس إرينبرجي) عبر الفحص الدقيق لغبار أذن (عظام أذن) الأسماك البالغة. وكما هي الطريقة التي تستطيع بها حلقات الأشجار إخبارنا عن الأنماط المناخية، تعد عظام الأذن بمثابة كتيب إرشادي يسجل حركات كل سمكة على حدة، ويوفر معلومات تحدد بدرجة كبيرة من الدقة الموطن الذي عاشت به السمكة في صغرها.

وقام الفريق بتحليل التوقعات النظرية باستخدام الفصل اللوني للغاز بتقنية متطورة تبنت ما أكلته الأسماك وصولاً إلى شبكة غذائية محددة لإعادة بناء تجمعات مواطن الصغار لهذه الأسماك ذات الأهمية البيئية. وقد فوجئ الفريق باكتشاف أن المشاتل التي تضم أشجار المنغروف على الخطوط الساحلية والأعشاب البحرية على الجزر قد تبعد عدة أميال عن الشعاب المرجانية حيث تتواجد الأسماك الكبيرة. كما لوحظ أن سمك الحمرة الصغير في المواطن الساحلية لا يزيد طوله أبداً عن 12 سم، مما يعني أن الأسماك الصغيرة تقطع رحلة محفوفة بالمخاطر تصل إلى 20 كم من الشعاب المرجانية عندما يبلغون هذا الحجم أو أقل. وأحياناً تتحرك هذه الأسماك عبر المياه على عمق يزيد عن 600 متر. "وكانت نشاطات الهجرة أكبر بكثير مما توقعنا مبدئياً"، ويصرح الدكتور ماكماهون. قائلاً: "كان ذلك بالنسبة لي أكثر الاكتشافات مفاجأة."

لكن هذه الأسماك تُظهر مرونة مذهلة كما أوضحت الدراسة أيضاً أنه ليست جميع أسماك الحمرة تضطر إلى استخدام الأراضي الساحلية الرطبة، فقد استقرت بعض الأسماك على الشعاب وعلى الجزيرة القارية على بعد بضعة أميال من الساحل. وتؤكد الدراسة أن تحركات الأسماك أكثر تعقيداً من النموذج الخطي للأسماك الساحلية التي تتحرك للخارج تجاه الشعاب.

ولهذه الاكتشافات آثار على التنمية الساحلية. حيث لا يكفي مجرد حماية موطن الأسماك البالغة — الشعاب المرجانية. إذ يمكن للأنشطة البشرية، التي قد تؤدي إلى تدمير مواطن أشجار المنغروف والأعشاب البحرية على سواحل البحر الأحمر، مثل بناء مجمع فندق أو مبنى لاستزراع الأحياء المائية، أن يؤثر تأثيراً كبيراً على عدد أسماك الحمرة الموجودة في الشعاب. يقول د. ماكماهون "علينا حماية المواطن الرئيسية التي تمتد الشعاب البحرية، بما فيها خلجان المنغروف وخلجان الأعشاب البحرية، علاوة على ممرات الهجرة الضرورية للتوصيل بين هذه المواطن الأساسية، ولهذه البيانات أهمية شديدة في تصميم المناطق الموصلة بشبكات فعالة ومحمية بحرياً".

غير أن العديد من الأسئلة لا تزال بلا جواب. لماذا تقوم الأسماك الصغيرة بهذه الرحلة الشاقة والخطرة عبر المياه العميقة المفتوحة للوصول للأعشاب المحيطية؟ هل تسافر الأسماك وحيدة أو في تجمعات؟ كيف تبحر هذه الأسماك إلى هذه الشعاب، وأي مسار تتخذه بالضبط؟ ما هي فوائد هذه الرحلة وكيف تؤثر على ديناميكية أعداد الأسماك؟ يؤكد البروفيسور بيرومين أن "هذه الأسئلة مذهلة وستبقينا مشغولين لسنوات قادمة، ولكننا أسئلة يجب الإجابة عليها إذا كنا نود أن نفهم بحق كيف ندير مواردها الساحلية بشكل فعال". ويتطلع الباحثون بالشراكة بين جامعة الملك عبد الله للعلوم والتقنية ومعمد وودز هول لعلوم البحار إلى الإجابة على هذه الأسئلة وغيرها من خلال الأبحاث التعاونية المستقبلية. ويعد دكتور ماكماهون أول من عين بالشراكة من قبل المؤسسات كما أن المعدات المستخدمة في هذه الدراسة والتي يستضيفها معمد وودز هول لعلوم البحار قد مولتها جامعة الملك عبد الله للعلوم والتقنية كجزء من شراكة الأبحاث التعاونية العالمية التي أطلقتها الجامعة عام 2007. □

KAUST RESEARCH PARK RECEIVES AURP AWARD

THE University's Research Park was named the 2012 Emerging Research and Science Park by the Association of University Research Parks (AURP) at the 17th Annual AURP Awards of Excellence in Madison, Wisconsin. The awards recognize outstanding research parks that demonstrate exceptional leadership in innovation and encourage the development of best practices.

Dr. Charles Kingdon, Director of the Research Park and Industry Collaboration, accepted the award on the University's behalf on September 19 at the AURP 2012 International Conference, where AURP President Kevin Byrne congratulated KAUST "for its unwavering commitment to turning Thuwal into the premier research center in the Middle East."

Dr. Kingdon thanked the AURP members and award committee for their recognition of the achievements of the Economic Development team and for their long-term support and continuing intellectual contribution to KAUST as it develops its twenty first century model of a vibrant and innovative "Science Town." The enthusiasm and early presence on site of several industry partners confirms the validity of the KAUST mission and the vision of King Abdullah. □



PROFESSOR NAMED TO EDITORIAL BOARD

DR. ANDREA Fratalocchi, Assistant Professor of Electrical Engineering, has been invited to join the Editorial Board of *Scientific Reports*, an online research journal published by the Nature Publishing Group. The freely available journal provides rapid access and high visibility to research in all areas of the natural sciences.

In his capacity as a *Scientific Reports* editorial board member, Prof. Fratalocchi will work with the journal's internal publishing team to help to manage the peer-review process of submitted scientific manuscripts. With this appointment, Prof. Fratalocchi joins a group of the journal's longer standing board members, including his KAUST colleague Dr. Khaled Nabil Salama, Assistant Professor of Electrical Engineering. □



Winter Enrichment Program (WEP) 2013

MARK YOUR CALENDARS!

THE annual Winter Enrichment Program (WEP) will be held January 12-30, 2013, with a special opening ceremony on January 11.

Through an expansive offering of courses, workshops, lectures, and cultural and recreational activities, WEP is a time for the whole KAUST community to discover new fields of interest and to be inspired.

KEYNOTE SPEAKERS

THE 2013 WEP KEYNOTES INCLUDE:

Janet Echelman – An American artist who reshapes urban airspace with monumental, fluidly moving sculpture that responds to environmental forces including wind, water, and sunlight.

Zahi Hawass – A world-renowned Egyptian Archeologist, who served as Secretary General of the Supreme Council of Antiquities and Director of Excavations at Giza, Saqqara, and the Bahariya Oasis. Dr. Hawass is responsible for many exciting recent discoveries.

Claude Nicollier – A veteran of four space shuttle missions, logging over 1,000 hours, including one spacewalk.

Charles Elachi – Director of NASA's Jet Propulsion Laboratory and Vice President of the California Institute of Technology. Dr. Elachi oversees space exploration programs such as the Mars Rovers.

Philip Rosendale – Founder and Chairman of Second Life, a 3D virtual world where users can socialize, connect, and create.

HIGHLIGHTS OF ACADEMIC, ENTREPRENEURSHIP PROGRAMS, AND SPECIAL EVENTS

CORNELL ENTREPRENEURSHIP AND INNOVATION: FINDING, EVALUATING, AND PITCHING NEW ENTREPRENEURIAL IDEAS

JOIN the Entrepreneurship Center's 3rd annual Entrepreneurship Certificate Course run by Cornell University. This seven-day course is designed to provide students with a broad introduction to entrepreneurship such as: generating an idea, obtaining intellectual property, delivering an elevator pitch, obtaining funding, and more. The Entrepreneurship Center will award successful participants with a certificate from Cornell University.

Immediately following the course, the Entrepreneurship Center will host All Actions No Talk Ignite Days. Entrepreneurs will form teams and each team will be matched with an entrepreneurial coach. Teams will work on their idea and have a final pitch in front of judges and investors. The best teams will automatically be accepted in the University's VentureLab Spring 2012 program.

LECTURES AND FIELDTRIPS:

- Lava Caves in Saudi Arabia
- Discover Reef Check
- Stargazing in the Arabian Desert
- Saudi Arabia's Largest Earthquake

CALL FOR SUBMISSIONS! THE SECOND ANNUAL INTERNATIONAL RESEARCH POSTER COMPETITION FOR UNDERGRADUATES

Please spread the word if you know undergraduates who would be interested in participating. The top 50 finalists will be invited to KAUST during WEP (all expenses covered). The abstract deadline is October 29.

Find more details at www.kaust.edu.sa/academics/wep/index.html

WEP SCIENCE FUN FAIR – CALL FOR PARTICIPANTS

Sign up now to participate in the 2013 WEP Science Fun Fair!

In preparation for this year's program, the WEP Team invites you to send proposals to participate in the WEP 2013 Science Fun Fair, which will be held on January 27, 2013. Be among the first to sign up by October 20 and get the chance to participate in a workshop with Tom Pringle (a.k.a Dr. Bunhead) on October 22.

All members of the KAUST community are welcome to present. Proposal submission closes on Wednesday, November 7.

Find out more at www.wep2013.acadox.com

WEP SYMPOSIUM

Sustainable Water Management as an Adaptation to the Challenge of Climate Change
January 12, 2013

VOLUNTEER AT WEP 2013!

If you wish to join WEP as a volunteer or an intern, please email the team at contactwep@kaust.edu.sa

STAY TUNED!

Join the WEP 2013 Community NOW at www.wep2013.acadox.com

REGISTRATION LAUNCH

November 12: Registration opens for graduate students

November 30: Registration opens for the rest of the community



WWW.WEP2013.ACADOX.COM



SAUDI NATIONAL DAY

The KAUST community gathered in the Amphitheater for an unforgettable evening to celebrate Saudi National Day.

اجتمعت جميع الجاليات في الجامعة للاحتفال بذكرى اليوم الوطني للمملكة العربية السعودية في ليله ذات أجواء عائليه وترفيهيه ممتعة.

MY UNIVERSITY



شهد السيارى

تخرجت شهد السيارى من جامعة الملك عبدالعزيز في جدة حاملة درجة البكالوريوس من قسم تقنية المختبرات الطبية. وعملت على إدراج مشروعها البحثي ضمن مسابقة الأبحاث الجامعية العالمية التي تنظمها جامعة الملك عبدالله للعلوم والتقنية وقد تم توجيه الدعوة لها ضمن المرشحين النهائيين.

وحازت شهد على المرتبة الثانية عن بحثها الذي قدمته تحت عنوان "دور المثيل في سرطان الغدة الدرقية" وذلك في التصفيات النهائية التي عقدت أثناء برنامج الإثراء الشتوي في شهر يناير الماضي. وتقول شهد أنها بدأت بالتفكير في الإلتحاق بجامعة الملك عبدالله بعد أن حضرت للمشاركة في المنافسة التي عقدت في جامعة الملك عبدالله والتي أتاحت لها الفرصة للإلتقاء بأعضاء هيئة التدريس والقيام بجولة في حرم الجامعة. ولفتت النظر إلى أنها أعجبت بشدة بالحرم الجامعي ومرافق الأبحاث المتوفرة فيها ، مما جعلها تدرك بأن الإلتحاقها بالدراسة فيها يتيح لها فرصة العيش بالقرب من مسكنها في جدة فضلا عن كونها تدرس في جامعة عالمية.

وبدأت شهد في دراسة العلوم البيولوجية في جامعة الملك عبدالله في شهر سبتمبر الماضي وهي مهتمة بأمور دراستها بشكل كبير، إلا أن ذلك لم يمنعها من ممارسة بعض هواياتها المفضلة خلال أوقات الفراغ ، مؤكدة أنها ستجتهد خلال دراستها كي تتمكن من تحديد خط سيرها في المستقبل. □

SHAHAD ALSAIARI

GRADUATE student Shahad Alsaiani found success at KAUST even before joining the University. Last winter, Shahad was studying for her bachelor's degree in Medical Laboratory Technology at King Abdulaziz University in Jeddah. She entered her research project in KAUST's International Undergraduate Research Poster Competition, and was invited to the finals, which were held during WEP 2012 (Winter Enrichment Program) in January. Shahad was awarded second place for her poster *Rule of SLIT-2 Methylation in Thyroid Cancer*.

"I started to consider KAUST after I came here for the competition," Shahad says. "We were taken on tours around the campus, and we got a chance to meet the faculty. The campus and the research facilities impressed me, and I liked the diversity. I realized that by studying here, I could still live near my home city, Jeddah, but study in an international university."

Shahad started her bioscience studies in September. She keeps busy with her courses, but enjoys yoga and swimming, and taking care of her bamboo plants if she has a moment of free time. "I don't yet know what I'll do after I graduate. I'll study hard, and see where it takes me."□



DR. VU BAO KHANH

Born and raised in the Binh Thuan Province in Vietnam, Vu Bao Khanh worked as an analytical chemist in his native country before moving on to South Korea where he gained his PhD in Chemical Engineering at University of Ulsan. Vu has recently joined KAUST's Catalysis Center where he works as a postdoctoral fellow in Professor Valentin Rodionov's group.

"What attracted me to KAUST was the opportunity to meet and work with so many talented and renowned scientists from all over the world," Vu says, "It is the best place for conducting research I have experienced."

In his free time, Vu enjoys reading, exercising at gym, and going for swims at the beach. "My wife and little son will join me here soon, and KAUST will be an excellent place for them to live. I believe that this culture, where many young scientists share knowledge and experiences, will help get KAUST in line with King Abdullah's vision for a knowledge-based economy. I contribute to KAUST - I am a part of it - and I look forward to following KAUST as it becomes one of the world's great institutions of research."□



مجموعة تضم 200 عضواً "دعونا نذهب لصيد السمك"

"دعونا نذهب لصيد السمك" هي مجموعة ترفيهية تمارس هواية صيد السمك مكونة من الرجال في جامعة الملك عبدالله للعلوم والتقنية تحت إدارة عماد الشريف الذي يعمل في الإدارة المالية بالجامعة وهو رجل مولع بصيد السمك. ويوجد مقر هذه المجموعة في ثول وتضم في عضويتها مانتى عضو مسجل. ويصف عماد بأن هواية صيد السمك تعد من الرياضات الجيدة التي توفر شعوراً بالاسترخاء بعد ساعات العمل وأثناء عطلة نهاية الأسبوع. ولا تمثل هذه الهواية لعماد عملاً تجارياً، وقد قام مؤخراً بشراء قارب صيد بهدف المساعدة في تنشيط المجموعة. ويتسع هذا القارب لثمانية ركاب ويبحر مرتين في اليوم. وعند إبحار المجموعة يكون أفرادها في أيد أمينة لاثنتين من صيادي الأسماك المحترفين من أهالي ثول. ويقول عماد إن هؤلاء الصيادين يثيرون دهشتمم ويبدو كما لو كانت لديهم نظم لتحديد المواقع في أنماهم. فهم عبارة عن خبراء محترفون في قراءة البحر والنجوم والرياح وتوجيه المجموعة إلى حيث توجد الأسماك بوفرة. ويشير الشريف إلى موقف عجيب عندما كانوا في إحدى رحلات الصيد، أخبرهم صائد الأسماك "أبو نايف" أن مجموعة من أسماك المامور ستتحرك إلى منطقة معينة عند الساعة 12:40 بعد الظهر. وقامت المجموعة بتحريك القارب إلى المنطقة ولكن في وقت أبكر مما هو مطلوب وواصلت عملية الصيد لساعات طويلة دون أن يصطادوا سمكة واحدة ولكن عند الساعة 12:40 بعد الظهر تماماً وصلت الأسماك وتمكنت المجموعة من صيد 17 منها ولولا المساعدة التي قدمها صيادو ثول لما تمكنت المجموعة من العثور على هذه الأسماك الكبيرة. وعماد من أهالي محافظة جدة، وتستفيد المجموعة من إلمامه بالأمور المحلية وهو يعكف حالياً على تكوين شبكة من الهواة المحليين.

LET'S GO FISHING

LET'S GO Fishing Kausties is a men's recreational fishing group managed by Emad Al Sharif, a KAUST financial analyst and a passionate fisherman.

The Thuwal-based group has around 200 registered members. "It's a good sport to give you relief after workdays and at weekends," Emad says, "so the group has been growing fast."

Even though Emad doesn't see the group as a business but a hobby, he recently bought a fishing boat to help get the group active. The boat carries eight men comfortably, and sets out to sea up to twice a day.

At sea, the group is in the safe hands of two professional fishermen from Thuwal. "The fishermen amaze us," Emad says. "They seem to have a GPS in their mind. They read the sea, the stars, and the wind to direct us to the fish. During one of the trips, fisherman Abu Naif told us that a school of grouper fish would move to a certain area at 12:30 p.m. We moved the boat to the area too early, and fished for hours without catching much. At 12:40 p.m., the fish arrived. We caught 17 of them. Without the Thuwal fishermen, we would not find these big fish."

Emad is from Jeddah, and the group benefits from his local knowledge. Emad is now busy building a network of local enthusiasts.□

الدكتور كهناه: تجربتي في جامعة الملك عبدالله فريدة وغنية

ولد الدكتور فو باو كهناه وترعرع في مقاطعة بنه ثوان في فيتنام وشغل وظيفة كيميائي تحليلي في وطنه قبل أن ينتقل إلى كوريا الجنوبية حيث نال درجة الدكتوراه في الهندسة الكيميائية من جامعة أولسان . وقد التحق الدكتور فو مؤخراً بمركز التحفيز الكيميائي في جامعة الملك عبدالله للعلوم والتقنية حيث يعمل كباحث في مرحلة ما بعد الدكتوراه في مجموعة البروفسور فالنتين روديونوف. ويقول أن ما اجتذبه لجامعة الملك عبدالله الفرصة المتاحة له لمقابلة والعمل مع العديد من العلماء الموهوبين والمشهورين على نطاق واسع من جميع أنحاء العالم. ويرى البروفسور فو أن الجامعة هي أفضل مكان سبق له تجربته للقيام بالأبحاث.

و يمارس الدكتور فو في أوقات فراغه هواية القراءة وممارسة التمارين في صالة الألعاب والسباحة في الشاطئ، ويقول أن زوجته وطفله سينضمان إليه عما قريب وأن جامعة الملك عبدالله ستكون بمثابة مكاناً ممتازاً للعيش فيه.

ويعتقد الدكتور فو أن هذه الثقافة التي تجمع الشباب من العلماء للمشاركة وتبادل المعارف والتجارب ستساعد الجامعة في تحقيق رؤية الملك عبدالله للاقتصاد القائم على المعرفة وأنه يساهم في نشاطات الجامعة وبشكل جزءاً منها ويتطلع إلى متابعتها في سعيها الدؤوب في أن تصبح واحدة من المؤسسات البحثية الرائدة في العالم. □